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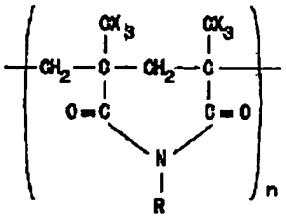
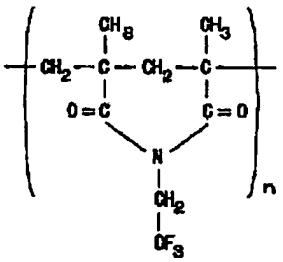
TITLE : POLYMERIC MATERIAL FOR OPTICAL COMMUNICATION, ITS SYNTHESIS, AND OPTICAL WAVEGUIDE USING THE MATERIAL



I



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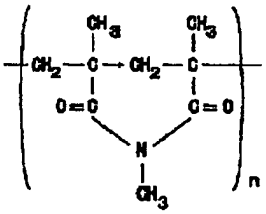

III

ABSTRACT : PROBLEM TO BE SOLVED: To obtain a polymeric material for optical communication having higher heat resistance than polymethyl methacrylate and being excellent in the easiness of controlling a refractive index by selecting a polymeric material containing a compound having a specified structure.

SOLUTION: This material contains a compound represented by formula I and having a weight-average molecular weight of 10,000-1,000,000, has more excellent heat resistance than polymethyl methacrylate, and is exemplified by a compound represented by e.g. formula II or III. A compound represented by formula I is obtained by heating under agitation a solution prepared by dissolving polymethyl methacrylate and 2,2,2-trifluoroethylamine in a solvent such as N-methylpyrrolidone to form a reaction solution, adding the reaction solution dropwise to water to form a precipitate, and separating it by filtration. A compound represented by formula III is obtained by dissolving polymethyl methacrylate and a methylamine/methanol solution in a solvent such as N-methylpyrrolidone, heating the mixture under agitation to form a reaction solution, and adding the reaction solution dropwise to water to form a precipitate. In the formulae, R is an alkyl or a phenyl; X is hydrogen, deuterium or a halogen; and n is the degree of polymerization.